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Modeling Turbulent Mixing Phenomena in the LLNL Reshocked RichtmyerMeshkov Instability Experimental Campaign[1] TANIM ISLAM, OLEG SCHILLING, Lawrence Livermore Natl Lab — The LLNL reshocked Richtmyer-Meshkov instability experimental campaign has been successfully designed and calibrated using high-resolution diagnostics to provide useful and reproducible data to study Richtmyer-Meshkov instability driven, plasma turbulent mixing. This work applies several Reynolds-averaged NavierStokes mixing models in a radiation hydrodynamics code to a set of experiments fielded under this campaign in order to characterize the properties of turbulence and mixing. The evolution of the turbulent mixing layer width and of quantities such as the turbulent kinetic energy are investigated to determine how well the models predict the development and further growth of turbulence, especially following reshock of the layer. Flow features that can be more carefully explored using direct numerical simulation, large-eddy simulation and related numerical techniques that could potentially improve the modeling are also discussed.

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